HYPERTENSION AND HEART DISEASE IN THE URBAN COMMUNITY*

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REGIONAL and societal variants influence any design for health preservation so that a blueprint for one area may require modifications before use in another. Our approach has been to focus on the major health problem of the community we serve and permit the several aspects of education, screening, treatment, and clinical investigation to function as the scaffold for complete health maintenance.

The Harlem Regional Stroke Program, initiated in 1970 at Harlem Hospital Center under the auspices of the affiliation program of Columbia University, was directed toward the prevention and treatment of stroke and hypertension. The Hypertension Unit of the program as it stands today is the result of partially cultivated and partially spontaneous growth.

Phase I had three particular aspects: 1) the establishment of an in-hospital teaching program for more effective treatment of known hypertensive patients, particularly those with malignant hypertension; 2) the institution of a community-health-worker training program of six months duration to prepare workers who would serve as lay health counselors and blood-pressure technicians and provide a visible link between the hospital and the community; and 3) the initiation of an ambulatory treatment facility prior to and adjunctive with a detection program. This was consonant with our philosophy that screening data accumulated by the Health Examination Survey[1] and by other programs[2, 3] were sufficiently indicative, especially in the black population, of a health problem which should no longer be merely identified but should be the object of intensive treatment and active clinical investigation. A sensitive and effective staff had to be assembled who would not

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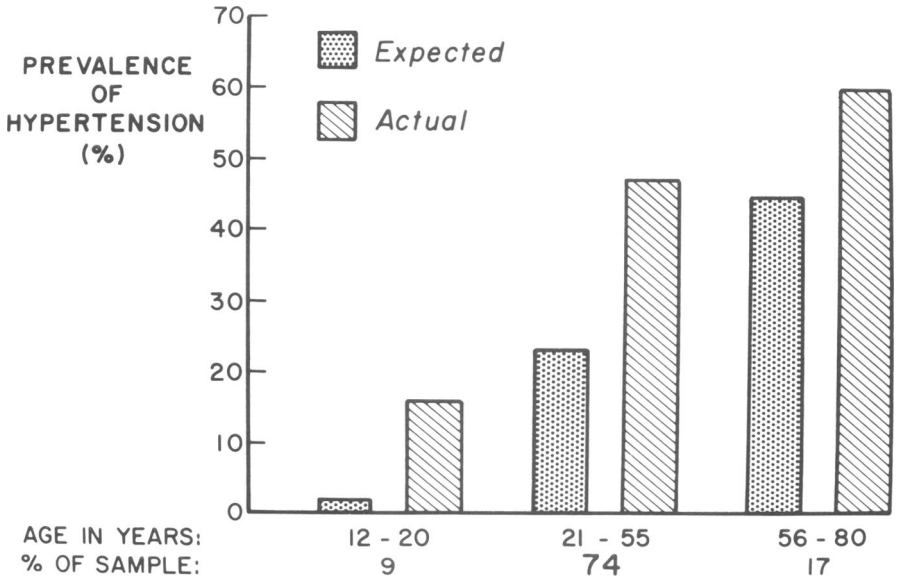

Fig. 1. Data on the prevalence of hypertension in the black population derived from the Health Examination Survey[1] and averaged for three age groups are compared with the percentage of elevated diastolic blood pressures observed in 131 black males at two health fairs in Harlem.

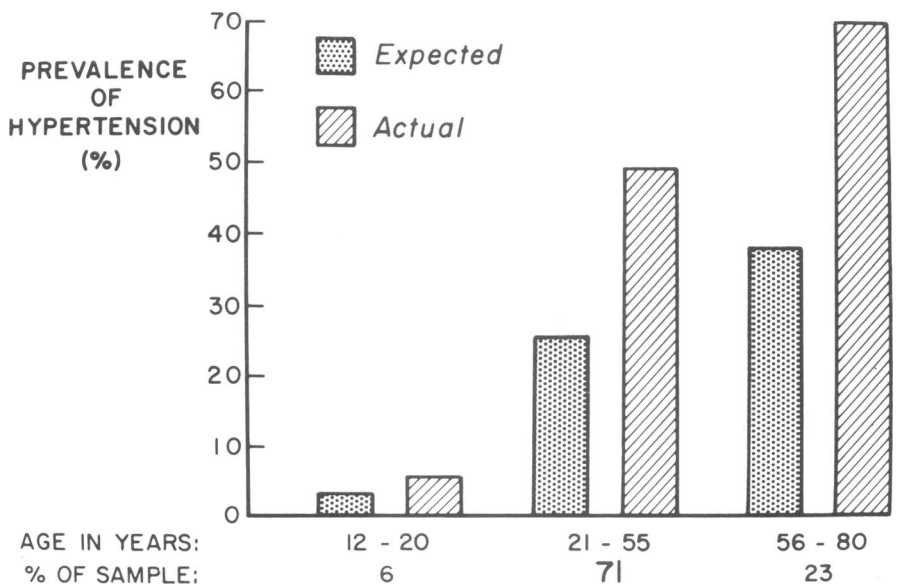

Fig. 2. Data on the prevalence of hypertension in the black population derived from the Health Examination Survey and averaged for three age groups are compared with the percentage of elevated diastolic blood pressures observed in 304 black females at two health fairs in Harlem.

only treat but would also make a careful appraisal of the characteristics of hypertension in a heterogeneous black population and evaluate the feasibility of intensive treatment and close follow-up in a crowded inner city clinic.

When Phase I was well-established blood pressure screening began at scattered sites throughout the community. This was Phase II, which had essentially three purposes: 1) to sensitize the community toward a heightened awareness of health preservation, 2) to gather information by case detection as to the extent of hypertension in the Harlem community, and 3) to prepare the way for a selected population-screening sample.

In interpreting our early screening data one should note that serious limitations apply to small unselected samples and that the term prevalence is accurate only for the comparative and averaged data derived from the National Health Examination Survey.[1] Four hundred and thirty-five individuals were screened in the first two health fairs in Harlem. Two observations were made at five-minute intervals on the left arm with the subject seated. An arbitrary division was made between "normal" and "abnormal" diastolic pressure (fifth Korotkoff sound) at 90 mm. Hg. Sixty-one of 131 males (47%) exceeded this value. Figure 1 compares these observations with the expected prevalence when averaged for three broad age categories. Similar findings are depicted in Figure 2 for 157 of 304 females (50%). Despite the absence of selection the age distribution was comparable to the preliminary 1970 census for central Harlem although there was a larger proportion of females in the health fair screening (69%) than in the census population (56%).

Extensive blood-pressure screening at scattered sites throughout the community yielded lower estimates of the extent of hypertension in the Harlem community. This larger sample of 4,220 individuals was skewed toward youth, since 43% of males and 34% of females were below the age of 20. This may have influenced in part the reduced margin between the expected prevalence (23%) and the observed percentage (29%) in males tested between 21 and 55 years and the lower rates for the older-age group (Figure 3). Twelve hundred and ninety-four females of the 2,514 screened were aged 21 to 55 years and 35% had blood pressure elevations, a figure 10% higher than would have been predicted from the averaged Health Examination Survey data (Figure 4). If these esti-

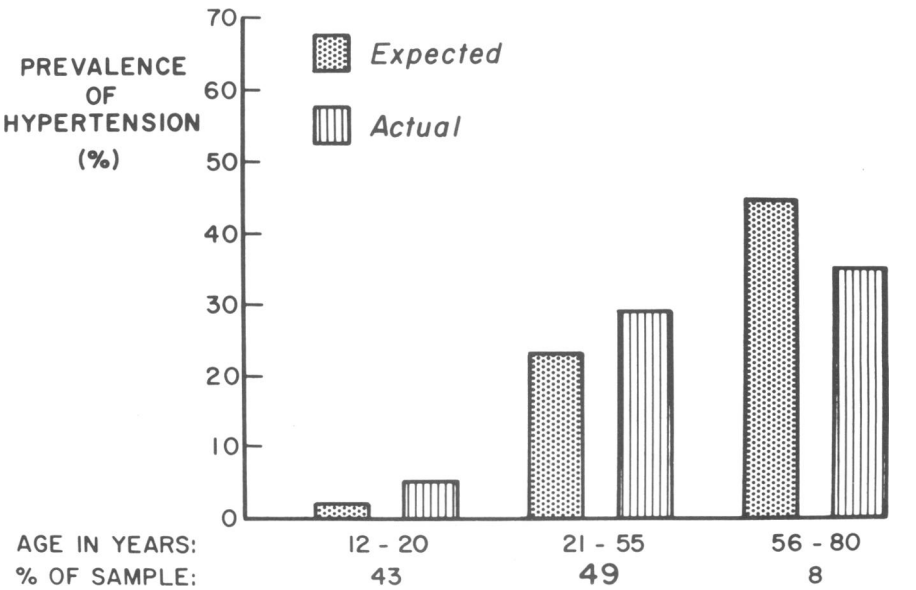

Fig. 3. Case detection in scattered sites throughout the community. Twenty-nine percent of 1,706 black males had elevated diastolic blood pressures, a figure 6% higher than expected.

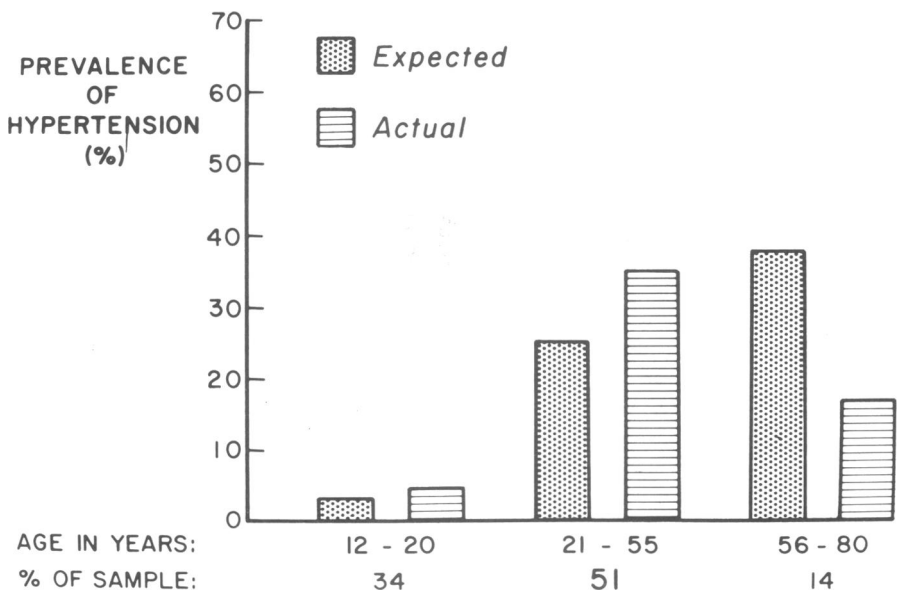

Fig. 4. Case detection in scattered sites throughout the community. Thirty-five per cent of 2,514 black females had elevated diastolic blood pressures, a figure 10% higher than expected.

mates are confirmed in the selected population sample the prevalence figures for hypertension in the black population will have to be revised upward.

Although scattered-site screening for blood pressure throughout the community has heightened health awareness and has emphasized the magnitude of hypertension as a health problem, there are imperfections in the concept of scattered-site screening which are apparent in Figure 5. A steady decline in screening follow-up was observed since only 30% of the patients found initially to have elevated blood pressure returned for repeat readings despite a community walk-in clinic established for that purpose. Although some of these people may have had medical follow-up elsewhere the response to letters and telephone calls indicated that contact was too brief to sustain credibility and ensure follow-up in the majority. The validity of the initial blood-pressure measurements taken by community health workers was supported by a 74% confirmation of the first readings. Even those who were motivated to have repeat measurements in the community clinic were not all willing to follow through on diagnostic evaluation and treatment as recommended. Only 35% of individuals rescreened, or a mere 8% of all those initially recorded with elevated blood pressures, eventually registered in the hypertension clinic itself. There appear to be at least two factors which contribute to these results: 1) a sense of continuity is lacking in a temporary setting where blood pressure is measured and follow-up depends solely upon individual initiative, and 2) barriers to medical care exist in large city clinics which are crowded and can be inhospitable and discouraging to patients seeking ambulatory care without in-hospital referral.

As a consequence total one-site screening has been initiated in selected apartment complexes not only to obtain a selected population sample but to provide the continuity absent in scatter-site detection programs. It has already become apparent that apartment residents recognize the community health workers as health educators who are assigned to their buildings and who encourage follow-up with the hypertension clinic or with physicians in private practice. We anticipate that these sites may also serve as blood pressure monitoring units after initial therapeutic control in the clinic and in the interim between clinic visits.

All patients who were referred from hospital or community sources to the special hypertension clinic during the first two years of the pro-

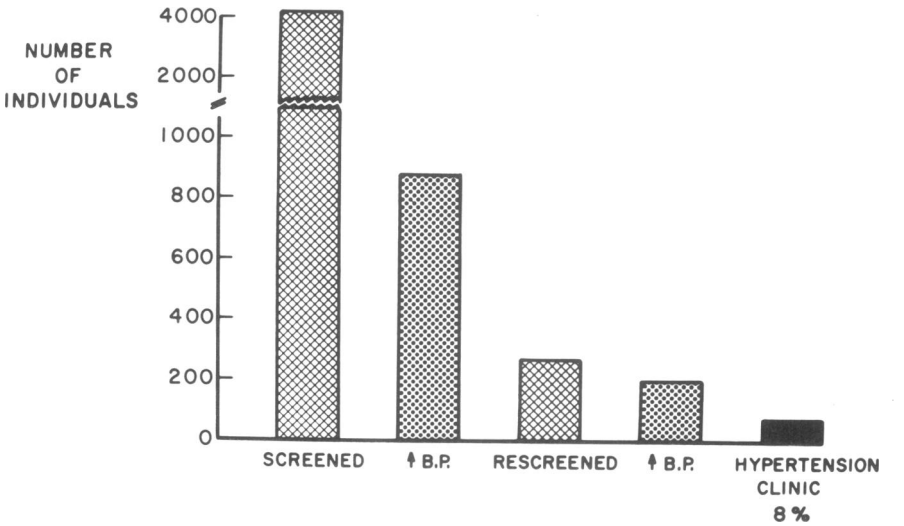

Fig. 5. Imperfections in scattered-site screening for hypertension. The resultant sample was skewed toward youth, with 43% of males and 34% of females below 20 years, reducing the apparent prevalence over all. Only 8% of those originally detected registered in the Hypertension Clinic.

Fig. 6. Age distribution and level of diastolic blood pressure prior to treatment in the base-line hypertension-clinic population: males.

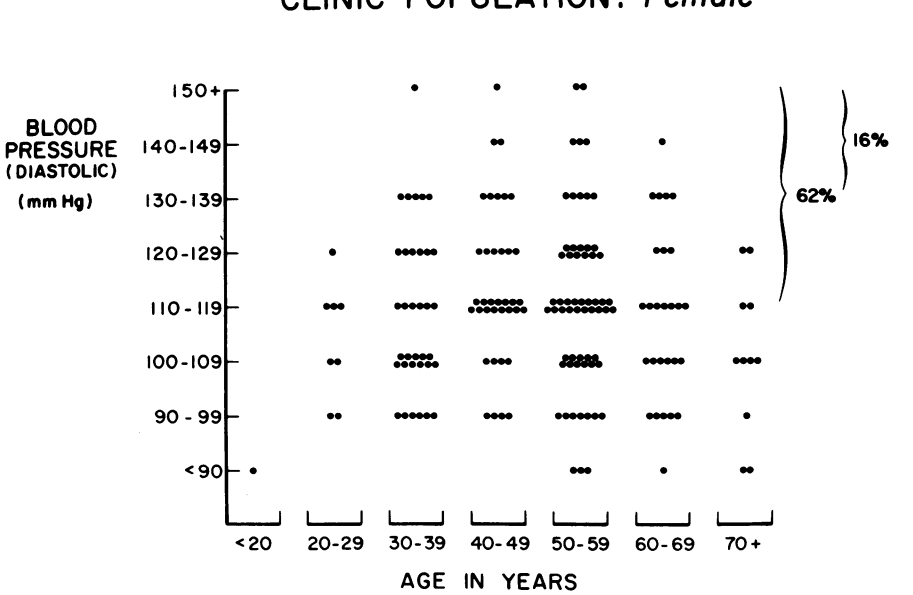

Fig. 7. Age distribution and level of diastolic blood pressure prior to treatment in the baseline hypertension-clinic population: females.

gram underwent routine diagnostic evaluation, including pretreatment plasma-renin determination and were designated the base-line group for long-term follow-up. Figures 6 and 7 indicate the age distribution and the level of diastolic blood pressure in male and female patients, respectively, who were not receiving treatment at the first clinic visit. In 63% of males the pretreatment diastolic pressure was 110 mm. Hg or more, and 21% were at or above 130 mm. Hg. Nearly identical levels were noted in females, 62% of whom had pretreatment diastolic pressures of 110 mm. Hg or more, and 16% had values of 130 mm. Hg or more. Despite the magnitude of these blood pressures only seven patients required hospitalization and four of these admissions were elective for special diagnostic procedures. Enthusiastic participation, by patients, an effective and supportive clinic staff, and explanatory pamphlets contributed to these results and suggest that a structured plan of ambulatory health care could have a significant impact in lowering morbidity, mortality, hospitalizations, and even financial costs associated with uncontrolled hypertension.[5, 6]

We have placed increasing emphasis on detection of hypertension in the 12- to 20-year-old group because the early screening figures suggested a higher-than-expected prevalence in youth, which generated a

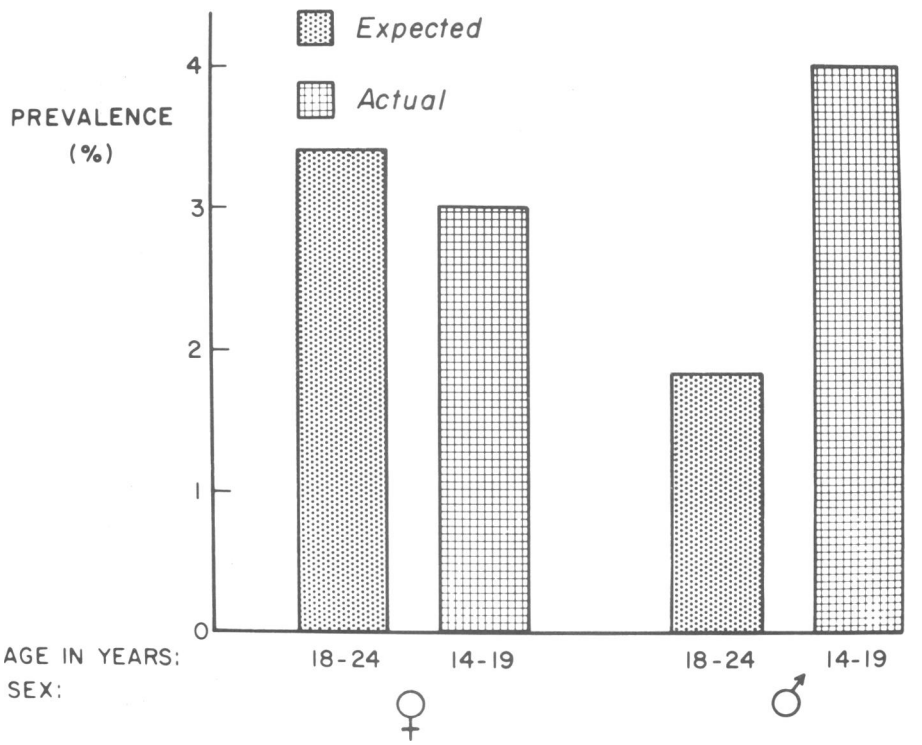

Fig. 8. High school screening for hypertension. When compared with an older age group, the younger girls have a comparable prevalence of hypertension and the young black males exceed by twofold the expected prevalence according to modified data of the Health Examination Survey.

working hypothesis that onset of essential hypertension in the black population must occur at an early age to achieve 30% prevalence in adulthood.

Fourteen hundred and eighty-three students at Brandeis High School in Central Harlem (about one half the enrollment) were screened for hypertension. Fifty-two students were found to have diastolic blood pressures of 85 or more mm. Hg on at least two separate readings. There were 26 males and 26 females ranging in age from 14 to 19 years. In Figure 8 these data are compared with that of an older age group (18 to 24 years) from the Health Examination Survey.[1] Considering the increment in blood pressure expected with age, the observation that the females match and the males exceed the expected prevalence by twofold underscores the possibility that present concepts regarding the age at onset of hypertension, at least in the black male, may require revision.

Summary

Our findings indicate that hypertension is a major health problem in the black population, affecting perhaps 30 to 35% of individuals between 21 and 55 years. Emergence of hypertension may occur earlier in life than previously supposed, especially in the young black male, according to blood-pressure screening in high schools.

Scattered-site screening, although useful in heightening awareness of health preservation, lacks the continuity required to ensure treatment and follow-up. Once the patient reaches a special clinic facility it is possible to achieve control of moderate-to-severe hypertension without hospitalization for the majority of patients. Selected residential sites are now the screening source which, in future, will serve as monitoring sites linked to the Hypertension Unit after therapeutic control has been achieved.

Acknowledgments

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